

EXHIBIT A



To: Kathy Yelick, Vice Chancellor for Research
Lok Siu, Associate Vice Chancellor for Research
Elizabeth Brashers, Assistant Vice Chancellor and Chief of Staff
David Castellanos, Chief Financial Officer

From: Rena Dorph, Director of The Lawrence Hall of Science

Date: April 29, 2025

Re: Impact and Implications of Federal Grant Terminations (to-date)

I am writing to provide you with a brief description of the impact (individual and collective) of the federal grant terminations we have received to date.

Context

The Lawrence Hall of Science has historically relied on and benefited from significant (20-25% of our budget) federal funding to support the research, development, innovation and scaling work that we do to inspire tomorrow by engaging young people, families, communities, and educators in STEM discovery and learning in ways that advance equity. Federal funding (mostly from NSF and IMLS, but also from NASA, NOAA, and NIH) provides a critical innovation and resource engine for all of our work and impact. Our federally funded work is critical to fueling our success at earning income from individuals and organizations across the formal (schools) and informal (afterschool, community-based, science centers) STEM learning marketplace. In essence, the impacts of these terminations have compromised our ability to carry out our institutional mission to the fullest degree possible.

Summary of Terminations To-Date

As of Friday, April 25, 2025 Lawrence Hall of Science Principal Investigators have collectively received 9 termination notices (8 grants; 1 subaward). Two of these were terminations of grants from the Institute of Museum and Library Services (IMLS) and 6 grants and 1 subaward were the result of terminations received from the National Science Foundation (NSF). I have listed these grants and termination dates by name here and provided more detail in an [appendix](#).

1. Caminos de la Ciencia: Integrating inquiry-based activities into Latinx community spaces (IMLS; terminated April 8, 2025; PI Rossiter; IMLS # MG-253254-OMS-23, SPO #057093)

2. Harnessing Data for Audience-Centric Growth Through Professional Development (IMLS; terminated April 8, 2025; PI Bustos; IMLS # ME-256150-OMS-24, SPO #059097)
3. Working Toward Racial Equity: Building Capacity to Institutionalize Equity in Outdoor and Environmental Science Education (NSF; terminated April 18, 2025; PI Foreman; NSF award #2315277; SPO #056728)
4. Understanding the Impact of Outdoor Science and Environmental Learning Experiences Through Community-Driven Outcomes (NSF; terminated April 18, 2025; PI Collins; NSF award #2314075; SPO #056582)
5. Conference Proposal: Localization, High Quality Instructional Materials, and Educational Equity (NSF; terminated April 25, 2025; PI Roman; NSF award #2413236, SPO #059050)
6. DTI: Justice and Equity Centered Online Learning Design: Attending to ethics and collaboration in AI systems learning (NSF; terminated April 25, 2025; PI Cannady; NSF award #2241576, SPO #055498)
7. Supporting Rightful Presence in Museum Spaces: Youth as Participatory Designers of Indigenous Mixed Reality Science Exhibit (NSF; terminated April 25, 2025; PI Krakowski; NSF award #2241805, SPO #055414)
8. Urban Youth Participation in Community and Citizen Science (NSF; terminated April 25, 2025; PI Cuff; NSF award #2115614, SPO #052227)
9. Coherent Asynchronous Online Mathematics Teacher Professional Development for Equitable Instruction (NSF/Wested Subaward; terminated April 25, 2025; Subaward PI/Grant co-PI; Subaward #S-21318; SPO #059561)

Impact of Terminations

The Financial Impact

The financial implications of these terminations range from tens of thousands of dollars to millions of dollars depending on the scope of the award and the proximity of the original end date of the project period. All in all, **we currently estimate the cumulative amount of lost funds at over \$6.4 million** dollars (\$4.5 million to Lawrence Hall of Science; 1.9 million in IDC to UC Berkeley) including funding for ~ 10 Lawrence Hall of Science FTE annually (including 3 GSRs). Further, we are concerned that we may receive additional terminations in the near future as NSF continues its review of current grants. I have summarized these estimated losses on [this google sheet](#). We will not have an exact amounts until we complete the close out of each of these awards. To learn more about the specific impact on FTE, please [see the stop work tracking workbook](#) (note the multiple tabs-one per grant) we created utilizing the template you provided to us to document the specific impact on FTE.

The Human Impact

While the financial implications are indeed debilitating, I also want to make sure to document the human cost of the termination of these awards. As you may note in the summaries I included in the [appendix](#), the projects funded by these grants are important to the thousands of young

people, educators and partners that they are designed to engage, serve, and/or impact. In addition, each of the project proposals includes a description of the broader impacts that the project will have. The abrupt termination of these grants means that these people and organizations will be negatively impacted by the loss of funding and the direct service it is supposed to support. Our subawardees¹ and key partners are also suffering impacts due to terminations of our active projects and it may be difficult if not impossible if litigations/appeals are successful, to resume work, given the disruptions these actions have caused to those entities. Furthermore, the collaborative work with the Ohlone community, which has been deeply meaningful to the Ohlone community, The Lawrence, and the University, will suffer an enormous set back if we are unable to complete the NSF-funded youth-driven exhibits development project, that is currently in a prototype phase. Taken together, this set of terminated projects was set to impact young people, educators in and out of schools, school districts, and community-based organizations well positioned to engage educators and young people across the country.

Further, there is a significant and detrimental impact to the academic personnel and staff of UC Berkeley's Lawrence Hall of Science in the following ways: First, these abrupt terminations have a significant impact on The Lawrence's budget and will result in reductions in time and layoffs for both academic personnel and staff if we are not able to quickly materialize alternative resources. Second, these mid-project terminations negatively impact the ability of those academic personnel and staff members who have been working on these projects to advance their work and careers. Third, these terminations may negatively impact individual and organizational relationships with critical partners and audiences, some of which Lawrence employees have spent years cultivating. Fourth, the terminations and the circumstances that led to them are impacting the morale of the entire Lawrence Hall of Science and the mental health of the individuals in our team.

The Intellectual Impact

Last but not least, I am documenting the intellectual impact. As you may note in the summaries that I included in the [appendix](#), the projects funded by these grants were each designed to advance research and/or practice in the field. In addition, each of the project proposals include a description of intellectual merit of the project. All of these projects included a knowledge building component through systematic research and/or evaluation efforts. Through a rigorous peer-review process, each of these awards was deemed important and necessary to contribute critical knowledge to the STEM learning field. The abrupt termination of these grants will result in lost opportunities to complete the data collection, analysis, and dissemination activities that were designed to advance research and practice across the field of STEM learning in and across formal (e.g. school) education and informal (e.g. science centers, libraries, afterschool, community-based organizations) learning settings.

¹ Current subawardees include: Naturebridge, Yes Nature to Neighborhoods, Wolf Ridge Environmental Learning Center, Informing Change and Harvard College. In addition, across these grant projects, we have been collaborating with several other organizations such as the Coalition of Communities of Color, Justice Outside, Restoring CARE, and others who are paid via contracts, or honoraria. We also are in partnership with multiple community-based organizations, libraries and schools to design and deliver our programs and services.

Furthermore, I am very concerned about the potential loss of critical expertise to The Lawrence and UC Berkeley if we are not able to quickly mitigate the loss of these funds with other sources. As you know, The Lawrence Hall of Science employs ~40 academic personnel, almost half of whom are impacted in varying degrees by the terminations that have occurred to date. These people and their expertise are critical to UC Berkeley's capacity for research, teaching, service, learning design, innovation, thought leadership and impact in the field of STEM learning and education. This capacity not only serves the work of The Lawrence Hall of Science but enriches UC Berkeley and the UC system significantly as we frequently work with faculty, scientists, educators, and staff across UCB and UC to advance knowledge and practice in STEM learning, education, communication and outreach.

The Societal Impact

Throughout The Lawrence Hall of Science's 55+ years of operation, federal funds, including those from NSF, NASA, NOAA, NIH, US Department of Education, and the Institute of Museum and Library Services have fueled innovation, disseminated science knowledge, prepared hundreds of thousands of educators to teach, launched millions of young people on scientific explorations, learning pathways and careers, and provided the basis for scientific literacy and decision making in everyday life for millions of individuals across the United States and internationally. A tragic by-product of these federal grant terminations is that past investments and the capacity that has resulted from them, is at risk. It is a surrender of resources and knowledge that is unprecedented in our history as a country, and one that will not easily be repaired.

Under separate cover, I will share our ideas for mitigating this risk and continuing to advance our mission, purpose and priorities during these challenging times.

Appendix

Summary Descriptions of Terminated Federal Grants as of April 25, 2025 The Lawrence Hall of Science • University of California, Berkeley

1. Caminos de la Ciencia: Integrating inquiry-based activities into Latinx community spaces

(IMLS; terminated April 8, 2025; PI Rossiter; IMLS # MG-253254-OMS-23, SPO #057093)

Project Period: 9/1/2023 to 8/31/2025
Total Award Amount: \$49,770
IMLS Program: National Leadership Grants (NLG)

Proposal Project Description: Lawrence Hall of Science at the University of California Berkeley proposes a 1-year Rapid Prototyping project to IMLS's National Leadership Grants for Museums solicitation entitled Caminos de la Ciencia: Integrating museum learning activities into a Spanish-Language STEM program. The project team will integrate family learning experiences into existing Spanish-language public STEM that are inclusive of Latinx's unique identity. We will do this by: (1) enhancement of STEM talks through individualized scicomm and inclusive scicomm training; (2) incorporation of hands-on activities; and (3) a shareable model that provides guidance for other museums to follow who wish to meet communities where they are. The beneficiaries of Caminos include Latinx STEM experts, East Bay Latinx family participants, and the museum field. Intended results include inclusion of Latinx in STEM museums, inclusion in STEM identity development, access to quality STEM learning, and representation in STEM fields.

Note: Programming takes place at and in collaboration with the Oakland Public Library: César E. Chávez Branch.

2. Harnessing Data for Audience-Centric Growth Through Professional Development

(IMLS; terminated April 8, 2025; PI Bustos; IMLS # ME-256150-OMS-24, SPO #059097)

Project Period: 6/1/2024 – 5/31/2027
Total Award Amount: \$249,999
IMLS Program: Museums Empowered (ME)

Proposal Abstract: The Lawrence Hall of Science at the University of California, Berkeley (The Lawrence) is seeking an IMLS Museums Empowered grant to enhance our capabilities in understanding, engaging, and serving chronically marginalized communities through the integration of data-driven approaches and comprehensive staff professional learning. This project will improve data collection and analysis, enhance practices that engage communities in collaborative design, and foster a data-centric mindset among Lawrence staff. This project will support staff in transparently aligning the institution with community needs and promoting inclusive educational experiences while balancing financial priorities and resources. The project will engage a diverse array of partners and advisors, facilitating continuous learning and change while enhancing staff skills, attitudes, and behaviors. The goal is to create a more inclusive and data-driven Lawrence Hall of Science, benefiting both marginalized communities and the broader East Bay region through increased visitorship and enhanced learning experiences.

3. Working Toward Racial Equity: Building Capacity to Institutionalize Equity in Outdoor and Environmental Science Education

(NSF; terminated April 18, 2025; PI Foreman; NSF award #2315277; SPO #056728)

Project Period: 1/2024 to 12/2028
Total Award Amount: \$4,731,307
NSF Program/Solicitation: Racial Equity in STEM Learning (EDU Racial Equity)

Overview from Proposal Project Summary: The Lawrence Hall of Science at the University of California, Berkeley and Justice Outside propose a 5-year Racial Equity in STEM Education project to advance racial equity in outdoor and environmental science education (OESE) by developing a replicable model for organizational capacity building, Working Towards Racial Equity (WTRE). Using a theoretical approach that has emerged from our partnership activities, the Racialized Conditions of Systems Change, we will support leaders from each of five organizations to facilitate and guide organization-wide discussions related to racial equity, setting the foundation for each organization to participate in a systems change-focused racial equity design process. Through this process, we will develop and formalize a Racial Equity Transformation ToolKit to activate field-wide change. Concurrent research will investigate the conditions and outcomes necessary to move toward more racially just and equitable work environments by paying particular attention to the experiences of Professionals of Color within their organization and the OESE field. The evaluation focuses on the WTRE model and will examine how and to what extent the model supports individuals to do equity work in their organizations. Mechanisms embedded within programming, research, and evaluation efforts, such as a focus on “ground truthing,” BIPOC Affinity Spaces, and the Research Evaluation Advisory Group, ensure that the voices, knowledge, and experiences of those experiencing inequities caused by systemic racism are at the center of all project activities. Multiple members of the project’s leadership team and Advisory board add additional perspectives as individuals who have experienced inequities caused by systemic racism.

4. Understanding the Impact of Outdoor Science and Environmental Learning Experiences Through Community-Driven Outcomes

(NSF; terminated April 18, 2025; PI Collins; NSF award #2314075; SPO #056582)

Project Period: 01/01/2024 to 12/31/2027
Total Award Amount: \$1,998,911
NSF Program/Solicitation: Advancing Informal Science Learning (AISL; EDU)

Overview from Proposal Project Summary: The Lawrence Hall of Science at the University of California, Berkeley proposes a four-year Integrating Research and Practice project to the National Science Foundation’s Advancing Informal Science Learning (NSF 22-626) program that will better position informal learning institutions to understand impact by producing a set of science and environmental literacy measures that center the knowledge, expertise, and experience of communities of color. Scientific and environmental literacy are valuable outcomes linked to academic learning, STEM career pathways, and broader engagement in science and environmental causes and advocacy. However, the current tools for measuring these concepts are insufficient; though useful for measuring some dimensions of impact, they are aligned with dominant views that exclude and erase the knowledge and expertise of communities of color. We plan to improve existing measurement tools as well as design new ones by engaging in a community-driven process that will center the voices of communities of color. We will then use

these tools to measure the impact of outdoor science and environmental learning (OSEL) experiences on students' scientific and environmental literacy. In Phase 1, we will form a Community Research Network (CRN) composed of youth, educators, leadership, and community members of partnering OSEL organizations. In collaboration with the CRN, we will engage in an iterative process of idea generation, data collection, and sensemaking to articulate and co-develop a set of revised and new outcome measures. In Phase 2, we will validate these measures through a quantitative study that will paint a fuller picture of the impact of OSEL experiences on youth, while also seeking to understand how youth of color make meaning of these experiences through a focal student case study approach. Finally, in Phase 3, we will collaborate with the CRN to share findings with the field, including through a conceptual framework that articulates the outcomes and structures within and adjacent to OSEL organizations that allow for youth to thrive.

5. Conference Proposal: Localization, High Quality Instructional Materials, and Educational Equity

(NSF; terminated April 25, 2025; PI Roman; NSF award #2413236, SPO #059050)

Project Period: 9/1/2024 – 8/31/2025
Total Award Amount: \$199,995
NSF Program/Solicitation: Discovery Research K-12 (DR K-12; EDU)

Overview from Proposal Project Summary: The proposed 1-year Workshop/Conference Project within the Teaching Strand addresses the need for dialogue among expert and emerging stakeholders about the relationship and tension between localization and high-quality instructional materials (HQIMs) as two important elements in the pursuit of equitable learning outcomes in K-12 science. The project would involve organization of a Conference Series consisting of an in-person Conference and a series of four follow-up Virtual Meetings, that would bring together a representative body of contributors including teachers and district leaders; state education agency leaders; researchers; and instructional materials designers. Participants will clarify definitions, share existing models and evidence, and identify priorities for future research agendas and design efforts. The in-person Conference will include up to 50 participants, with funding provided to cover travel and subsistence expenses for 31 participants. Additional funding will be offered to address participation barriers for teachers and those with family care responsibilities. Outputs of the Conference Series will include a proposed research and design agenda for localization of HQIMs, as well as vignettes, exemplars, and models of current approaches, which will be shared via a public website and disseminated through practitioner and researcher audiences.

6. DTI: Justice and Equity Centered Online Learning Design: Attending to ethics and collaboration in AI systems learning

(NSF; terminated April 25, 2025; PI Cannady; NSF award #2241576, SPO #055498)

Project Period: 9/2023 to 8/2026
Total Award Amount: \$1,291,633
NSF Program/Solicitation: Innovative Technology Experiences... (ITEST; EDU)

Overview from Proposal Project Summary: The University of California, Berkeley's Lawrence Hall of Science (The Lawrence) proposes a 3 year Developing and Testing Innovations project titled, "DTI: Justice and Equity Centered Online Learning Design: Attending to Ethics and Collaboration in AI Systems Learning." If funded, the project would strengthen and broaden

youth capacity for, and disposition toward, artificial intelligence (AI) domains and careers, and the increasingly critical sociotechnical competencies needed in AI workforce pathways. This goal will be pursued by (1) engaging high school aged youth chronically excluded from AI learning experiences in an online learning sequence that integrates learning of AI technical skills with principles of ethics that include security, accountability, fairness, transparency, and privacy; and (2) generating new knowledge about designing for prosocial learning engagement in online learning environments that lead to greater career awareness and interest.

7. Supporting Rightful Presence in Museum Spaces: Youth as Participatory Designers of Indigenous Mixed Reality Science Exhibit

(NSF; terminated April 25, 2025; PI Krakowski; NSF award #2241805, SPO #055414)

Project Period: 9/2023 to 8/2026

Total Award Amount: \$1,292,298

NSF Program/Solicitation: Innovative Technology Experiences... (ITEST; EDU)

Overview from Proposal Project Summary: We, the University of California, Berkeley (UC Berkeley) and mak-'amham, an Ohlone cultural institution that empowers Ohlone people with a rich cultural identity, propose a three-year ITEST Developing and Testing Innovations project to address the ongoing marginalization of Indigenous communities from informal science learning spaces by developing and studying a model that strengthens Indigenous youths' capacity for, and disposition toward STEM pathways. Drawing on a set of design principles that emerged from an existing partnership between the Lawrence and mak-'amham, the project will engage 20 Ohlone youth (ages 10-16) in iterative cycles of participatory design and prototyping to create immersive Indigenous Science exhibit experiences for the Lawrence Hall of Science (the Lawrence) using mixed reality technologies. In centering Indigenous perspectives within science and technology learning experiences and highlighting connections between Indigenous cultural identities and contemporary STEM career pathways, our proposed project aims to reframe STEM learning to increase Indigenous youth's rightful presence (defined by a sense of belonging and shifting institutional power; Calabrese Barton & Tan, 2020) to foster positive affective shifts toward STEM that can improve prospects for a more diverse STEM workforce. The project's research will advance understanding of design practices that contribute to rightful presence for Indigenous youth, and investigate the impact of the participatory design model on youths' STEM learning, science identity, and interest in STEM careers. The project will generate insights to inform a professional learning model that supports informal science educators to facilitate Indigenous-centered learning experiences.

Notes:

- *The structure of this partnership shifted once the 'ottoy Initiative hired Vincent Medina, Louis Trevino and Deirdre Greene as University employees. At that time we discontinued the subaward with mak-'amham and we support the partnership with the Ohlone community through their leadership on our staff.*
- *A supplement was granted to this proposal to support a day-long showcase of NSF support of informal learning experiences in May, 2025. The day will feature drop-in and scheduled activities showcasing current NSF ITEST and AISL projects, including IMRSE (described above), Urban Youth Participation in Community and Citizen Science (Award No. 2115614), and AI Behind Virtual Humans: Communicating the Capabilities and Impact of Artificial Intelligence to the Public through an Interactive Virtual Human Exhibit (Award No. 2116109).*

8. Urban Youth Participation in Community and Citizen Science

(NSF; terminated April 25, 2025; PI Cuff; NSF award #2115614, SPO #052227)

Project Period: 9/15/2021 - 8/31/2025**Total Award Amount:** \$1,199,094**NSF Program/Solicitation:** Advancing Informal Science Learning (AISL; EDU)

Overview from Proposal Project Summary: The University of California at Berkeley's Lawrence Hall of Science proposes a four-year Research in Service to Practice project to explore the educational and developmental impact of an informal science education programming model that features Community and Citizen Science (CCS) activities on youth of color residing in urban communities. The project is grounded in an undergirding hypothesis which holds that engagement in CCS - focused experiences results in valued learning outcomes that better position youth of color to more effectively engage in STEM-related educational, occupational, and civic activities. Each year in three economically challenged urban communities located throughout the country a total of 180 youth of color between the ages of 14 and 18 will participate in month-long summer or semester-long afterschool programs that feature CCS activities. These activities will include the collection, analysis, interpretation and presentation of environmental quality data that addresses local, pressing concerns, such as soil lead contamination and air particulate matter pollution. The project will explore the manner in which particular CCS activities (e.g., project design, data analysis and interpretation, data presentation) impact youth "science agency," which is defined as a combination of constructs that include Science Identity (i.e., sense of themselves as science thinkers), Science Value (i.e., awareness of the potential benefits of applying scientific practices to addressing critical community health and environmental issues) and Science Competency (i.e., belief of themselves as competent science practitioners). Subsequently, the project will explore how these constructs relate to one another, as well as the relationship between emerging science agency and the development of capacities to participate in community-based activism and/or advocacy efforts.

9. Coherent Asynchronous Online Mathematics Teacher Professional Development for Equitable Instruction

(NSF/Wested Subaward; terminated April 25, 2025; Subaward PI/Grant co-PI: Mayfield-Ingram; Subaward #S-21318; SPO #059561)

Project Period: 7/1/2024 - 6/30/2028**Total Award Amount:** \$151,967**NSF Program/Solicitation:** Discovery Research K-12 (DR K-12; EDU) via WestEd

Scope of Work for UCB/LHS Subaward: The Lawrence Hall of Science will co-direct the design and development of a 25-hour professional learning course for middle school mathematics teachers by (1) supporting the creation of a trajectory for the equity strand focused on equitable teaching practices and positioning; (2) Providing feedback on the trajectory of the mathematics strand, with particular regard to the ways in which it supports/hinders the learning goals of the equity strand; (3) co-designing the initial module and create outlines of additional modules; (4) reviewing and providing feedback on the set of modules as they are built/designed by the larger project team; (5) reviewing feedback and research data to suggest design improvements; (6) reviewing and providing feedback after improvements have been made to course materials; (7) supporting the team in dissemination efforts, including co-authoring peer-reviewed papers and presentations.